An Extra-pulmonary Complication of Vaping: Pneumomediastinum in a Young Male

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Introduction

Pneumomediastinum is defined as the presence of air or other gas in the mediastinum, also known as mediastinal emphysema. [1] It can be caused traumatically or spontaneously by either blunt or penetrating trauma, iatrogenic, or spontaneous air leaks through small alveolar ruptures. This report describes a case of pneumomediastinum associated with vaping in a young adult.

Case History

18 year old male with no significant past medical history who presented with findings of pneumomediastinum after vaping. The patient originally presented with altered mental status, which was thought to be due to drug use. CT head showed air tracking and subcutaneous emphysema which led to performing a CT neck, which showed extension of subcutaneous emphysema into the mediastinum. CT chest showed ground-glass opacities and extensive new pneumomediastinum. (Figure 1) Patient admits to heavy use of marijuana by vaping along with use of cocaine and Xanax.

CT Imaging

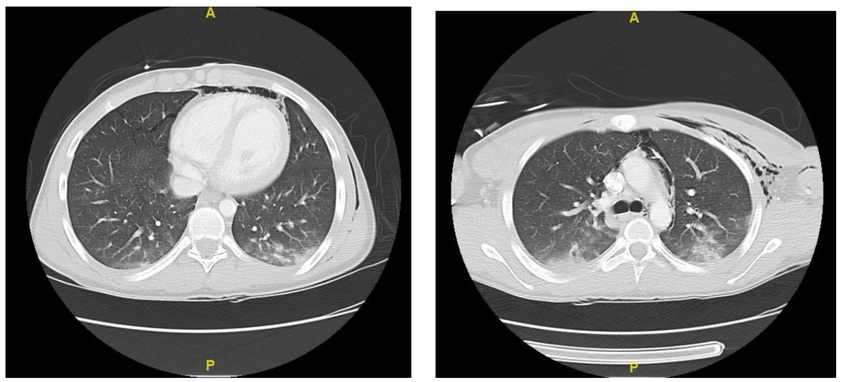

Figure 1. Image stills were created from the CT Chest. Pneumomediastinum present around anterior aspect of pericardium (left) along with anterior aspect of thoracic aorta (right). In addition, subcutaneous emphysema noted on left anterior chest wall (right)

X-Ray Imaging

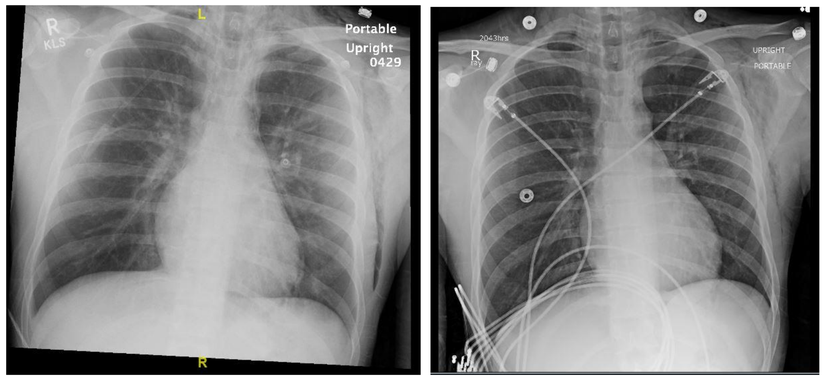

Figure 2. Initial chest x-ray (left) showed extensive pneumomediastinum along with subcutaneous emphysema on the left anteriolateral chest wall. Image on right is the chest x-ray two days later with improvement of the pneumomediastinum

Examination

- Vitals: Afebrile and hemodynamically stable. Initially on supplemental O2 at 2L but titrated off to room soon after admission
- Head/Neck: Atraumatic. Neck was supple and non-tender. Crepitus was noted on the left lateral side on palpation of the skin
- Cardiac: Regular rhythm and rate. No murmurs. Hamman's crunch noted on auscultation
- Respiratory: Aerating well without any distress. Clear to auscultation bilaterally, no wheezes or rhonchi
- Neuro/CNS: Alert and oriented upon examination but did not remember any of the prior events leading up to his hospitalization. CNII-XII grossly intact. No neurological, motor, or sensory deficits. Normal gait
- Esophogram was done to rule out esophageal rupture and was normal without any extravasation.
- Repeat Chest X-ray showed slight regression of the pneumomediastinum and he was deemed stable for discharge on hospital day #3 with oral antibiotics and close follow up.

Final Diagnosis

- Alveolar rupture, E-Cigarette and Vaping Associated Lung Injury

Discussion

The patient was monitored and managed conservatively with the thought that the subcutaneous emphysema/pneumomediastinum should resolve spontaneously without aggressive intervention. A bronchoscopy would be performed if the pneumomediastinum worsened or if the patient's clinical course worsened. He was placed on IV antibiotics empirically for pneumonia and possible aspiration pneumonia. An esophogram was performed which ruled out any esophageal rupture. Repeat Chest X-ray was done which showed slight regression of the pneumomediastinum and vitals were all stable throughout hospital stay. (Figure 2) He was further evaluated with Inpatient Psychiatry and started on an antidepressant. He was deemed stable for discharge on hospital day #3 with oral antibiotics and advised to follow up closely.

Conclusion

Extensive social history should be taken when speaking with young adults. In particular, dangers of vaping along with polysubstance abuse should be counseled. Other instances of spontaneous pneumomediastinum have been reported in young otherwise healthy adults and the risks should be addressed to those who are currently vaping. A small case study in Wisconsin studied 53 cases of E-cigarette associated pulmonary illnesses with 91% of patients having abnormal chest radiographs, 5 cases of pleural effusions, 4 cases of pneumomediastinum, and 1 case of pneumothorax [3] In addition, a similar case was also documented in the Annals of Thoracic Surgery. [4] The amount of additives to E-cigarettes are vast including propylene glycol, glycerol, flavorings, other chemicals, and nicotine. [5] The human health effects of these additives and E-cigarettes are still being investigated and this case is meant to be an additional cautionary tale to highlight the dangers that are associated with it's use, particularly in our youth.

References

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